

# Social Acceptance of Negotiation Support Systems

*blind review*

## ABSTRACT

We investigate people's attitudes towards the possible use of negotiation support systems (NSS) in different social contexts and the consequences for their design. The data collected in an online survey with 120 respondents, showed (a) that subjective norm is an important factor influencing the intention to use the system and (b) that the acceptance of NSS depends on the use context. Therefore, we argue that NSS should be designed not merely as tools being used in the actual negotiation but as social devices harnessing social networks to provide support in all negotiation phases.

## Author Keywords

design, NSS, TAM, social acceptance, social computing.

## ACM Classification Keywords

J.4 [Computer applications]: Social and behavioral sciences—Sociology, H.1.2 [Models and Principles]: User/Machine Systems—Human factors, K.4.m [Computers in Society]: Miscellaneous.

## INTRODUCTION

A skillful negotiator has to carefully balance the issues at stake [9], have a good understanding of his own needs and those of the opponent and since negotiation is a social activity, manage relationships and handle emotions. Different research areas, primarily management science, e-commerce and artificial intelligence [7,10], deal with supporting people electronically during negotiations. However, as formulated in [2], research on negotiation support systems (NSS) concentrates on technological solutions, while the social problems they intend to solve are secondary or completely neglected. Swaab and colleagues [8] claim that the success of an NSS depends on the understanding of the activity that the system will support. We would like to take a step back even and claim that in order to design NSS that will be successfully used we first need to investigate whether people accept the use of NSS in

different social settings. Negotiation is inherently a social activity. That holds not only for negotiations involving several parties, but also for dyads. Literature on business science [4] has, e.g., emphasized the influence of relationships on negotiation processes. Moreover, based on results from expert focus groups [6] we know that people's attitudes towards NSS differ widely and that social contexts might play a role when choosing to use a system or not. To illustrate this point, a recent study on user acceptance of web-based NSS [10] predicts that 80% of the users would use the system to prepare and train for negotiations but only 61% would use it in the negotiation. The study is considering e-negotiations. We believe that in face-to-face situations the second number would be even lower.

We conducted an online survey (a) to find out in which situations people consider an NSS socially acceptable, (b) to find the factors and relationships that influence this acceptance in the different situations and social contexts and (c) to investigate the consequences of people's attitudes towards NSS for their design.

## RESEARCH QUESTIONS

We looked at several detailed research questions. RQ1: Is there a relationship between the user characteristics and usefulness, attitude towards negotiation, behavioral control and social acceptance? The user characteristics include demographic data and experience in computer usage and with negotiations. We expect that age and possibly gender influence the acceptance of an NSS in different situations. In a focus group we conducted it was anticipated that younger people are more open to technology use in public places and social situations than older people because younger generations grow up with technology around them. This is reflected in RQ1a: Is there a negative impact of the user's age on the acceptance of a NSS in a face-to-face situation?

Based on the results of focus group session we did with end-users (40 middle aged women), we expect that people with low negotiation skills and a negative attitude towards negotiation are more likely to use an NSS. Due to their own lack of knowledge about negotiations or insecurity they might find an NSS more useful than people, who enjoy negotiating and consider themselves good at it. This leads to the questions: RQ2a: Is there a negative relation between a person's attitude towards negotiations and the attitude towards NSS? RQ2b: Is there a relationship between on the

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one side negotiation skills and experience and on the other side the attitude towards negotiations?

We believe that the acceptance of a NSS in a social context has an impact on the intention to use it. The social acceptance is measured by two variables, one describing how acceptable people find it to use an NSS in a situation and the other describing in how far they believe that the opponent would find it acceptable. Whereas in a face-to-face situation it might play a big role what the opponent thinks, it might become less influential in a phone scenario. Therefore, our last research questions are: RQ3a: Is there a relationship between the social acceptance of an NSS and the intention to use it? RQ3b: Does the negotiation situation determine the social acceptance?

### THE MODEL

The relations between usefulness, attitude towards a system and intention to use as well as the influence of subjective norm and behavioral control that we are interested in are well-studied for information systems within the scope of the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB). Based on our research questions we created a model to explain possible factors influencing the social acceptance and use intention of an NSS in different situations that combines both models and extends them with a number of factors that we think are influential specifically for NSS.

#### TPB and TAM extended

The TPB [1] is a well known model in social psychology to explain the link between attitudes and behavior. It identifies the attitude towards a behavior, subjective norm (an individual's perception of others' beliefs whether he or she should perform the behavior) and perceived behavioral control (an individual's perceived ease or difficulty of performing the particular behavior) as indicators for the intention to use, which determines together with the perceived behavioral control the actual behavior regarding the use of a system. As an adaption to the TPB, the TAM [3] has been widely used to explain people's attitude towards the use of technological systems. It identifies perceived usefulness and perceived ease of use as two independent factors that influence the intention to use a system and its actual use. Since our study takes place before the implementation of a system, we are not able to measure the actual use of a system or the ease of use. To be able to measure usefulness and behavioral control we showed either videos or storyboards of NSS use cases. We kept the attitude towards NSS influencing the intention to use, but added the general attitude towards negotiations as an influential factor of attitude towards NSS. As mentioned earlier the use of such systems might depend on different situations and how socially acceptable it is to use a system in that situation. Therefore, we added social acceptance as an extra factor influencing the intention to use. Last, we added a number of user characteristics including: age, gender, nationality, education, computer and negotiation skills and experience.

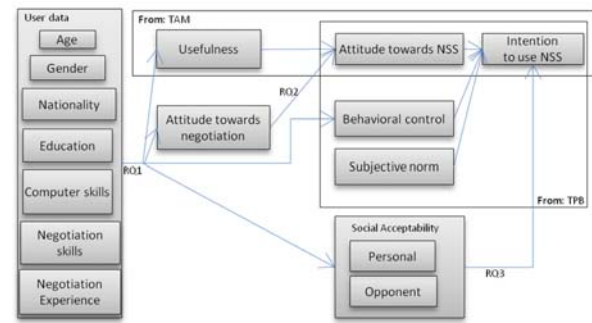


Figure 1. NSS Social Acceptance Model

### THE SURVEY

To give respondents an idea about the contexts and type of functionality that an NSS could perform we identified, together with a negotiation coach, five distinct situations for NSS use: face-to-face with the boss with concealed use, face-to-face with open use at a car dealer, distant negotiation on the phone, collaborative preparation of a couple and short preparation being mobile on a train (Figure 2). For each situation we wrote and filmed (e.g. *removed for blind review*) a scenario to be shown in the questionnaire.



Figure 2. Scenarios (Screenshots from videos)

#### The questionnaire structure

The questionnaire is based on the model shown in Figure 1. After a short introduction we collect the user characteristics. The factors usefulness, subjective norm and social acceptability are measured after each scenario presented to the respondent. At the end of the survey we collect more general information about the attitude towards NSS, including behavioral control, usefulness and overall attitude. For the majority of questions we ask the respondents to rate their agreement with a number of statements on a 7-point Likert scale and for an explanation for the ratings after each scenario to explore why people might accept the system in one scenario but not in another.

#### Versions

We setup a Dutch version with short videos (3 min) and a Dutch and English version each with screenshots from the videos and text explaining the situation. The version with videos took about 45 minutes to fill in and the picture versions 10-15 minutes. To avoid order effects we shuffled the order of scenarios and statements. The questionnaire can be found online (*removed for blind review*).

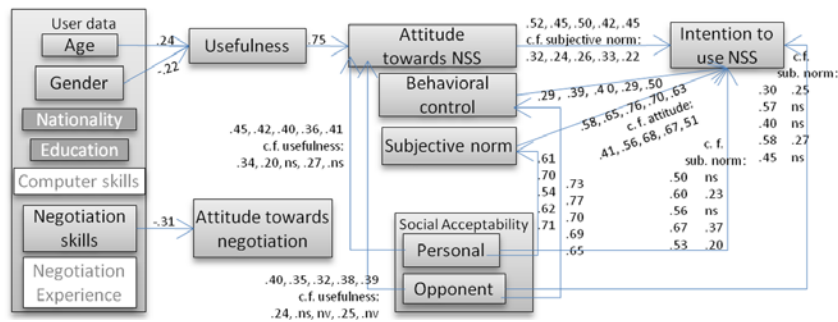


Figure 3. Model with (partial) correlations

### Survey Distribution and Reponse

With NetQuestionnaires ([www.netquestionnaires.com](http://www.netquestionnaires.com)) we administered and distributed the survey online. We used personal networks and online forums to invite people to participate. The questionnaire was approached by 365 people. 178 started filling in the questionnaire, 120 (74 male, 46 female) from 18 countries completed it, 72 the English, 31 the Dutch version with videos and 17 with pictures. The most represented countries were the Netherlands (48), Sweden (19), Germany (15) and Greece (10).

## RESULTS

### Measurement of Constructs

We used Cronbach's alpha to test the reliability of the constructs *usefulness* (.95), and *behavioral control* (.72) including all original items. The alpha for *attitude towards negotiation* is .69, keeping the items "I enjoy negotiations" and "I try to avoid negotiations". For *negotiation skills* we keep three items ("I am a good negotiator", "I would negotiate myself/I would let someone else do it, if the negotiation was important") (.71). For all constructs we calculated aggregated measures.

### Data Analysis

We used correlation analysis to check our hypotheses. Significant correlation coefficients can be found in Figure 3.

#### User's background

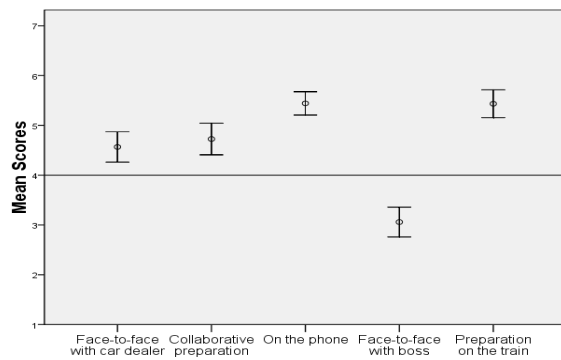
We found a positive correlation between age and usefulness and a negative one between gender and usefulness. Computer skills and negotiation experience were not correlated with usefulness, attitude towards negotiation or behavioral control. We removed the item education from the model, since our data was not heterogeneous enough to draw any conclusions on the effects of education level. We removed nationality since we did not analyze the data yet. Interestingly, we found that negotiation skills are negatively correlated with the attitude towards negotiation opposing our initial hypothesis. This issue needs further research.

#### Usefulness

We found a positive correlation between usefulness and the attitude towards NSS, which confirms the relationship predicted by TAM.

#### Subjective Norm and Social Acceptance

We found that social acceptance, (personal and opponent view), is correlated with the attitude towards NSS and the intention to use for all scenarios. However, when controlled for usefulness in the first case and subjective norm in the second, the correlations are either weaker or not significant. This suggests that the attitude towards an NSS is mainly influenced by how useful people consider it. The intention to use the system depends mainly on the subjective norm, i.e. whether people that are important to the respondent would use it. The dominance of subjective norm was confirmed by regression analysis (stepwise method) conducted for each scenario given attitude towards negotiation, behavioral control, subjective norm and social acceptance to predict the item intention to use NSS, since it was the only variable included in the resulting regression models in all cases. From analysis of the qualitative data (comments), we can see that social acceptance considering the opponent plays an important role, too. People tend not to care whether the opponent accepts the NSS if they are not in eye contact ("This [on the phone] seems like the best application of the NSS, because it is invisible to the 'opponent'.") In the face-to-face scenarios people value the opponent's opinion higher. In the car dealer scenario some respondents doubt the acceptance of the NSS by the opponent. However, usefulness, the competitive situation ("I think the opponent will accept it because otherwise people would go to the competitor.") or the ability to put pressure on the opponent ("I like the secret weapon!") cause people to care less about the opponent. In the job scenario between an employee and her boss, most respondents are worried about the opponent's opinion on the use of an NSS. The comments show different views considering not being honest ("I think it is not acceptable because she lies about using an NSS."), impolite ("It's very impolite to use an electronic device during a face-to-face negotiation."), embarrassed ("I would be embarrassed to use an NSS in this situation."), nervous ("Stealth mode would make me extremely nervous.") or appearing weak ("In a face-to-face negotiation this would make you look like you cannot think for yourself."). A dominant opinion was that the interaction with the device will interrupt the communication flow ("The boss could get angry for not paying attention, the communication would be disturbed").



**Figure 4. Mean social Acceptance ratings (1=low to 7=high)**

As shown in Figure 4, the social acceptance generally depends on the situation in which the NSS is used. Whereas most scenarios have an average rating above the scale's mean (4), the face-to-face situation with the boss got a low rating (3.06) lying significantly below the average ( $t(119) = -6.25, p < .001$ ). This means, in the latter scenario people do not accept the use of an NSS. The situations which are most favorable for NSS use are negotiations on the phone and preparation on the train. At the car dealer or during the collaborative preparation NSS are accepted, but the average rating is closer to the neutral value.

#### DESIGN IMPLICATIONS

Bringing the results of the data analysis into perspective of NSS design, we learned that not only aspects like functionality and usefulness play a role, but also social aspects like the subjective norm and social acceptance. An NSS is not only a tool people use to fulfill a certain task but it is a social device that depends on the use context. Therefore, the designer has to determine in which context the device should be used and fit the design to it and the social norms that come with it. Furthermore, our survey has shown that the respondents value the opinions of close friends or family highly, both for deciding whether to use an NSS and when taking decisions during the negotiation. Some respondents mention explicitly that they consult others before an important negotiation. ("I would take others' opinions into consideration as well, [...]". "In buying something like a car [...] I get advice for prices online, from *friends*, commercials.") This behavior made us contemplate about the idea to create NSS that are connected to social networks. Friends using the same type of NSS could be connected to each other, and whenever one needs to take a decision they could provide help or generally comment on each others' actions. Another idea is storing negotiations within this network in a database that every NSS can access. This will enable users to see what strategies friends used in similar negotiations. These ideas fit social computing trends [5] by bringing mobile information spaces to the user and using social networks to enhance the system's functionality. Also, if people like to ask friends for advice when negotiating, a good NSS should be designed to behave in a similar manner. Surely, there are more ways designers can think of to make NSS more social devices.

#### CONCLUSION

When designing NSS social issues cannot be neglected. Our survey has shown that the use context of an NSS is an important factor influencing its social acceptance. The survey's respondents would not accept the use in face-to-face situations when the relationship to the opponent was important. In situations in which the opponent is not aware of the NSS, it is most accepted. The subjective norm is the most dominant factor influencing the intention to use an NSS. People value opinions of their close ones higher than their own when deciding whether to use an NSS and they also ask them for advice when negotiating. One limitation of the survey was that the respondents' answers were not based on hands-on experiences from interacting with a system. Other aspects to be considered for future research are the influences of educational and cultural background of the user on attitudes towards negotiation and NSS.

Overall, when designing novel NSS we should aim for creating NSS not merely as tools but as social devices considering the use context and social networks.

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